

A mine worker chips away to separate waste rock from precious stone

“Emeralds are a tough thing to find, but it’s easier now because of the technology. We know that where we dig, we will find the stones eventually”

**Marisa Cannon** travels to Zambia to discover how emeralds are mined at the giant facility in Kagem.

And she finds that the local community is benefitting in a multitude of ways.

Photography by **Will Elsom** →

**T**

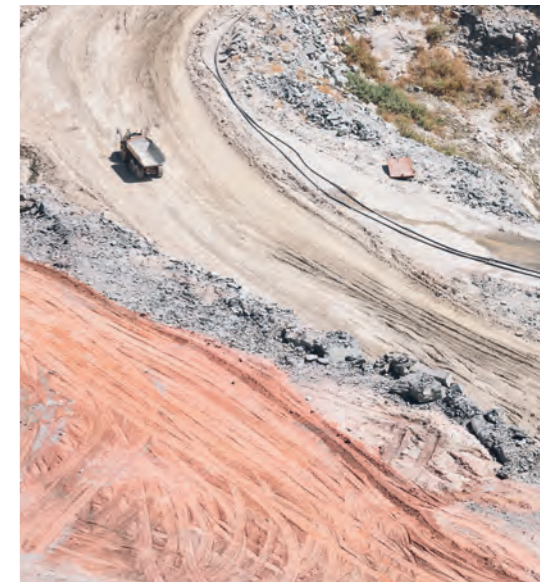
he time is 17.25, and we've been crouching, waiting, staring into the marbled pit below for ten minutes now. The sound of voices crackles from a walkie-talkie nearby – two minutes and counting, they say. The time passes like honey through a sieve. Suddenly a deafening roar reverberates around the valley, followed by a sequence of short, sharp explosions, and a colossal plume of smoke erupts from the base of the pit. A grey cloud of pulverised rock floats upwards, turning the vista of the sunlit savannah into an opaque and dusty backdrop.

I'm at Kagem emerald mine in the heart of Zambia's Copperbelt Province during one of the site's controlled

'blasts'. Known for its copper reserves, the region is also rich in emeralds, with Kagem serving as the world's single largest producer, accounting for a quarter of global output. Gemstones have been mined for decades on a small scale in the region, and often stumbled upon by sheer luck – historically, few metrics have been used to gauge their whereabouts. The market has also been fluid and unregulated.

"The trading system has always been very hand to hand," says Jack Cunningham, group sustainability, policy and risk director at Gemfields, the mining company with a majority stake in Kagem. "A miner would take a stone to someone they might know, who might know somebody else, until it reached someone who could cut and polish it into a gemstone for use."

Gemfields took over the mine in 2008, introducing a brave new world of technology and a workforce befitting



Centre: shimmering sediment from Kagem's Chama pit

Kagem's scale and potential. Today, it spans 16 square miles and functions as an open-pit operation, around 130 metres deep and 1,200 metres long. Some 1,000 workers, ranging from geologists and chiselmens to security and kitchen staff, live and work on the site, keeping the enormous operation ticking along every single day of the year.

Amon has worked at Kagem since 1975, and remembers it as a very different place when he first arrived. "When I started, we went out into the mine with a pick, a shovel, a hammer and a chisel," he explains. "We only had one excavator, which was shared between all of the pits. There is so much more machinery and money now, which is why, I think, this mine has survived. Emeralds are a tough thing to find, much harder than copper, but it's easier now because of the technology, and we know that where →





we dig, we will find the stones eventually.”

For workers such as Amon, the day starts at 6am, when Kagem’s ‘production teams’ – made up of five chiselmens, two security staff and a geologist – begin to search for signs of beryl, the aquamarine mineral whose presence may suggest emeralds are nearby. To give context to the scale of this task, 100 tonnes of waste rock produce just one tonne of ore, and one tonne of ore produces around 60g of emerald. Any rock with a glimmer of green is sent to the Wash Plant, where it is broken up and transferred to a series of conveyor belts, where workers with long, prong-like utensils rotate the rock-like strips of meat on a barbecue, searching for hints of precious stone.

The Sort House is the last destination before the gems are sent to auction, where the ‘washed’ rock is cut and chipped away with industrial cutters before experts sort the emeralds into a grading system that Gemfields pioneered, consisting of 200 grades of various sizes, qualities and colours.

People travel from all over the surrounding Kitwe area to work at the mine. But what makes Kagem different from other mines here is the level of investment that Gemfields has made within the community. Each year, the company aims to set aside one per cent of its revenue for projects that work for the local people, providing access to education, farming technology and healthcare.

After an enlightening day navigating valleys of rubble, peering into crates of waste rock, and trying to polish an emerald with a tool not dissimilar to a dental scraper, we make our way to Kapila Community School, a primary unit that Gemfields has provided with new classrooms and equipment.

As we pull into the drive, we’re greeted by a troupe of children, singing in unison and moving to the beat of a drum. Surrounding them is a basic set of whitewashed

Left: local farmer  
Florence Samboma.  
Right: Audrey  
Mubiana

G E M F I E L D S  
S E T S   A S I D E  
O N E   P E R   C E N T  
O F   R E V E N U E  
F O R   L O C A L  
P R O J E C T S

schoolhouses, containing light and airy classrooms with polished, wooden desks, alphabet posters on the walls and well-worn chalkboards. Within the vicinity, there is only one other primary school, Chapula – also under Gemfields’ stewardship – which, in 2016, was joined by a secondary school. Before this, some children would have to travel more than six miles to get to school, often on foot. At Kapila, I meet Audrey Mubiana, who has taught here since 2012. She lives in the city of Kitwe, and travels more than 18 miles to get here every day.

“My friends ask me why I don’t transfer to another school,” she says. “But I want to be here to motivate the young girls. When they see me, I hope they will think, ‘I want to concentrate on my studies, so that one day I can be like the Madam.’ If everyone leaves, then nobody will be here for them.” →





Students at Kapila and Chapula schools

Mubiana describes the children at Kapila as “vulnerable”. Many are orphans or simply do not have the money to carry on their schooling past primary level, because secondary education is not free in Zambia. If this is the only education that some of these students will get, Mubiana wants them to have good role models, and she wants to be one of them.

Further down the same dirt track that leads from the mine, we duck into a bramble-knotted track where we meet Florence Samboma, a local woman who has farmed a plot of land here since 2008. She’s joined by friends and fellow farmers Mary Chifita and Gladys Chisha, whose youngest eyes us inquisitively, fastened in a colourful sling across Chisha’s shoulder. Our guide tells us that it’s usually women who undertake the labour-intensive farm work here, for reasons that are not fully explained, but jokes are bandied about that the men are simply “too lazy”.



All three women are members of one of four farming cooperatives that Gemfields has set up in the area, offering workshops on financial literacy, problem-solving for crops in times of difficult weather, and diversification strategies. Samboma leads us down a muddy trail towards her plot, pointing out the Chinese

cabbage and onions that she’s grown and waters with a treadle pump installed by Gemfields.

“Before we started working with Kagem, we would take our vegetables to markets in town,” she says. “The problem was that the prices go up and down, but Kagem buys at market price no matter what is happening in town.” With some 1,000 mouths to feed at the mine, demand is certainly there, but Samboma says having the option to supply both Kagem and the urban markets has given her greater freedom.

As the women have their photo taken, they chat and laugh excitedly, and exude a sense of pride and self-sufficiency when talking about their work. Samboma supports four school-going children, and she eagerly tells us about the hens that she’s started rearing at home to sell to Kagem. It’s good to diversify, she says, as the weather for crops can be unpredictable.

Further down the same track, we head towards the Nkana Clinic, officially opened by Gemfields in 2017. Before Nkana, the nearest clinic was five miles away, and families would transport those needing urgent care in wheelbarrows, while medical staff used the local church to treat patients during outreach programmes.

In the shade of the clinic’s reception, midwife Jane Chali explains that staff see around 1,000 patients each month, who come for treatment from as far as the town of Kalulushi, around 25 miles away. Today, there are just a handful of patients, including an expectant mother in the labour ward. We’re given a tour of the post-natal, men’s, women’s and children’s wards, spacious and notably empty, where gleaming white, cast-iron beds line each wall, illuminated by the soft glow of the mid-afternoon sun. The clinic is serene, clean and well-equipped – you get the feeling that it could confidently handle a medical emergency, which is comforting, given that staff see the number of patients almost double during the rainy season between November and April, when malaria is most prevalent.

Excavators sift and move rock in Kagem’s Chama pit

Every Tuesday, the clinic operates an ‘Under-fives’ clinic, where parents can bring their children for a check-up – they’re weighed, given vaccinations if needed, and have their growth monitored. Healthcare is free in Zambia, if you can get it, but access is one of the sticking points.

Chali has worked in a number of clinics before Nkana, but says this one is a cut above. “Nkana is open 24 hours a day, which is not something the people here have had before. The way it’s set up, →



the way it's built... compared with others, it's comfortable. We have proper bathrooms, proper toilets and they're modern.”

It's a difficult balance to strike – coming into a place, equipped with the expertise to exploit and mine a precious mineral, without alienating or disrupting the communities that call that place home. But what Gemfields has done is create an ecosystem where locals benefit from the company's work and initiatives, be it through employment, healthcare, education or farming associations, as much as the company benefits from the people's land. And in that balance lies the jewel in Gemfields' crown. ■

